Problem Families: the Influence of Family Ownership on Environmental, Social and Governance Rankings

Problem Families: the Influence of Strategic Family Holdings on Environmental, Social and Governance Rankings

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Research Question/Issue: We investigate the relationship between family ownership and corporate social responsibility (CSR) and assume that entrenched family owners may have incentives to either promote or inhibit environmental, social or governance performance (ESG). We also examine how the firm's governance system intervenes between family ownership and its effect on CSR.

Research Findings/Insights: For a sample of 24,873 firm year observations drawn from 2002 to 2012 covering 46 countries and 3,919 firms, our findings show that family ownership is negatively associated with ESG performance as assessed by ASSET4. Although the direction of causality cannot be empirically proven, we argue that corporate social responsibility is an unlikely cause of family ownership. Furthermore we find that family ownership has a negative impact for firms with either high or low CSR. This is consistent with ownership impacting on CSR but inconsistent with the reverse as family firms would not be attracted to high CSR firms. Our results also show that family ownership is associated with poor corporate governance. Once we control for governance strategic ownership is no longer associated with CSR but family ownership retains a significant association.

Theoretical/Academic Implications: Previous research has suggested that family ownership may impact positively on ESG due to the owners' identification with various stakeholders affected by ESG, or conversely that the wealth maximisation

incentive for undiversified family owners may cause them to restrict those ESG activities which are seen as negatively impacting on firm value. Our results are consistent with the latter. They also show that the influence is primarily through firm governance practices and not via the owners' direct influence on management decisions.

Practitioner/Policy Implications: Assuming that corporate social responsibility can have a substantial impact on the environment, the wellbeing of firms' stakeholders and society in general, regulators will want to improve ESG performance. Our results suggest that encouraging diversified ownership and/or encouraging or regulating for better internal governance to mitigate the influence of entrenched family ownership may lead to better CSR performance.

Key words: Corporate Governance; Corporate Social Responsibility; Family Firms; Concentrated Ownership

Problem Families: the Influence of Strategic Family Holdings on Environmental, Social and Governance Rankings

This study examines the impact of strategic equity holdings, especially family strategic holdings, on ASSET4's assessment of the environmental, social and governance (ESG) performance of firms. Whilst corporate social responsibility has been much researched there is little evidence concerning the factors that encourage or hinder environmental, social and governance investment (Margolis, Elfenbein, & Walsh, 2007). This paper takes the view that climate change, the failure of corporate governance contributing to the financial crisis, and problems with the ethical approach of firms and wealth inequalities all point to the importance of corporate social responsibility in general and ESG in particular. Whilst the costs attributable to ESG investment may be presumed to fall on the firm and its owners, the benefits may partly fall on other stakeholders, including employees, customers, firms, society and the state. This could lead to underinvestment in ESG, at least as perceived by stakeholders other than investors. If so, an understanding of those factors which impact on ESG investment, here assumed to be reflected in ESG scores, may be important.

The sample consists of 24,873 firm/years drawn from 2002-2012 for 46 countries, mainly representing developed economies. For each case we match the social, environmental and governance scores provided by ASSET4 with equity strategic holdings available from Worldscope together with financial controls and firm characteristics. The ESG scores, used as the dependent variable, no doubt measure underlying ESG performance with error. However, ASSET4 scores are positively and significantly associated with similar scores that are available from

FTSE4Good and it is not obvious why any error in the ESG scores would be systematically associated with the independent variables. Equally, the strategic equity holdings recorded by Worldscope may measure equity holdings with error but we supplement the analysis of the recorded percentile with an analysis based simply on the dichotomy between more or less than 10 percent holdings.

It is not obvious what the best measure of strategic equity holdings should be. The analysis assumes that, for example, employee/family or investment institutions' equity holdings are best measured as the total for each category. It is certainly quite possible that members of a family, or like-minded institutions, will act in concert or simply have the same incentives and constraints. It is also possible that a measure of the total family equity holding is a misleading measure. For that reason much of the analysis is based on a simple categorisation: does the firm have a substantial equity holding, designated as a strategic equity holding, attributable to a type of shareholder? Thus the analysis investigates whether firms with large government equity holdings, or substantial leverage, act differently from those with substantial family or corporate cross-holdings.

The first results are based on conventional regression techniques where the social, environmental or governance score is modelled against the test variable identifying the strategic holdings and a set of control variables accounting for year, industry, country, leverage, profitability, market-to-book and capitalisation. The results are largely consistent: entrenched strategic equity holders, and in particular family strategic shareholdings, are associated with lower ESG. However, simply demonstrating an association between strategic shareholdings and ESG scores does not show that the ownership structure causes the low ESG.

We investigate causality by first arguing that in the case of family ownership a reverse causality is unlikely. It requires that low levels of ESG encourage investors to retain their family ownership and that high ESG could not be countered by direct action from powerful entrenched owners. Our evidence suggests that the typical family ownership in a firm with family investors is 28 percent. We also use quantile regressions to investigate the relationship between ownership and ESG for cases where the ESG score is higher than would be expected given the firm characteristics. Here we obtain a slightly stronger negative impact of family ownership on ESG than for firms with relatively low ESG. This is inconsistent with the argument that low ESG encourages family ownership retention.

Additional results are derived from a propensity score matching (PSM) approach that attempts to resolve the endogeneity difficulty inherent in conventional regression modelling (Rosenbaum & Rubin, 1983). If the regression model apparently demonstrates that an independent variable, X, is significantly associated with the outcome variable, Y, this may be because both X and Y are "caused" by Z. It is only under particular circumstances that including Z on the right hand side will fix this problem (Armstrong, Jagolinzer & Larcker, 2010). Instead, PSM models the probability that a particular case will be treated i.e. X=1 assuming a zero-one categorisation, and matches cases with similar probabilities of X=1, where one case is treated and the other is not. The difference in the outcome variable, Y, can then be assessed. However, the in the main our results based on PSM are consistent with the regression models.

This study adds to a limited set of recent research papers that attempt to explain what affects ESG performance in firms (Barnea & Rubin, 2010; Ioannou & Serafeim, 2010; Rees & Mackenzie, 2011). These studies have focused on

institutional and/or international dimensions and have incorporated financing largely as a marginal item of interest. The results in prior research relevant to financing are also inconsistent and preliminary. The underlying assumption is that managers are sympathetic to ESG investment but investors may not be, particularly if undiversified (Barnea & Rubin, 2010). Whilst the results are particular to the ESG investment context they also shed light on the real impact that ownership structure can have on managerial decision-making. The findings robustly indicate that strategic ownership, and employee/family equity holdings in particular, tend to be associated with lower ESG scores. Given the large impact ownership attributes appear to have on ESG performance scores, the implications for policy makers intending to promote ESG investment are potentially important.

PRIOR RESEARCH AND HYPOTHESES

Large Shareholdings and CSR

Whatever costs and benefits a corporation encounters from CSR activities, they are borne by the equity owners (Cox, Brammer, & Millington, 2004). The cost-benefit balance influences corporate performance and attracts certain types of investors (Demsetz & Villalonga, 2001) who buy or sell their shares exerting 'walk activism' (Chung & Talaulicar, 2010). However, given the long-term nature of concentrated ownership (Cox et al., 2004) and resulting strategic rather than trading interests, large owners are shown to monitor management rather than simply exit the company (Burkart, Gromb, & Panunzi, 1997; Demsetz & Lehn, 1985; Faccio, Lang, & Young, 2001; Jensen & Meckling, 1976; Johnson & Greening, 1999; La Porta, Lopez-de-Silanes, Shleifer, & Vishny, 2000; Shleifer & Vishny, 1997).

While the way large equity holders influence management decision-making is complex, their interventions are guided by the perceived ultimate return on their investments (Clark & Hebb, 2005; Lydenberg, 2007). Regarding CSR projects, management literature has offered substantial evidence as to how these investments could be beneficial. Outstanding CSR is argued to be a source of competitive advantage (Aguilera, Williams, Conley, & Rupp, 2006; Bansal & Roth, 2000; Berry & Rondinelli, 1998; Jones, 1995; McWilliams & Siegel, 2001; Porter & van der Linde, 1995). This advantage can come from distinguishing the brand, signalling quality and appealing to conscientious consumers (Becker-Olsen, Cudmore, & Hill, 2006; Fisman, Heal, & Nair, 2006; McWilliams & Siegel, 2001; Siegel & Vitaliano, 2007), employees (Bénabou & Tirole, 2010; Brekke & Nyborg, 2008; Turban & Greening, 1997) and responsible investors (Cox et al., 2004; Dimson, Karakaş, & Li, 2012).

Apart from the likely link between the above competitive advantage and value creation, strong corporate social performance is shown to be associated with more favorable financing terms (Cheng, Ioannou, & Serafeim, 2011). Furthermore, good relations with the bondholders and creditors and the resulting effect on the cost of capital are arguably directly relevant for long-term investors with large stakes who have to borrow substantial resources on the debt market (Jensen & Meckling, 1976). The positive association between strong CSR and better access to finance may come from strong CSR being related to better overall management competence (Berry & Rondinelli, 1998; Hart, 1995; Karkkainen, 2001; Solomon, Solomon, & Suto, 2004; Stephan, 2002), stronger governance and hence lower information asymmetry (Renneboog, Ter-Horst, & Zhang, 2008) and lower risks of the costs associated with

potential conflicts with stakeholders (Godfrey, Merrill, & Hansen, 2009; Jo & Harjoto, 2011).

However, prior evidence remains inconclusive as to whether superior social performance results in superior financial performance (Barnett & Salomon, 2006; Margolis et al., 2007; McWilliams & Siegel, 2000; Renneboog et al., 2008). At the same time, the scope for management discretion regarding expenditures on various social and environmental projects may link them to managerial entrenchment and a source of agency conflict (Cespa & Cestone, 2007; Orlitzky, Schmidt, & Rynes, 2003). Bénabou and Tirole (2010) argue that managers regard CSR as a source of long-term value creation, a strategic tool to balance interests of various stakeholders or a way to pursue their own ethical position and personal agenda. Barnea and Rubin (2010) refer to the latter as the 'warm-glow' effect, and Rees and Mackenzie (2011) point out that it is tempting to acquiesce to the demand of stakeholders seeking CSR investment and that a reputation as a responsible manager may benefit managers' careers. Barnea and Rubin (2010) argue that insider ownership may either permit insiders to encourage non-value maximising projects as they are strong enough to resist pressure from other investors to prioritise wealth maximisation, or alternatively, they may resist such investment as it will be personally costly. Therefore, strategic owners may not be convinced that CSR is a source of strategic opportunities and not part of a self-serving management agenda.

Emerging evidence points consistently towards a generally negative association between blockholdings and CSR (Ioannou & Serafeim, 2010; Rees & Mackenzie, 2011; Rees & Rodionova, 2012). While our main focus is on family ownership, we firstly revisit the relationship between closely held blockholdings and

CSR and, based on the prior evidence discussed above, we predict the following relationship:

Hypothesis 1. There is a negative relationship between strategic equity holdings and ESG.

Families and CSR

Family ownership is thought to be the most common ownership structure for firms (La Porta, Lopez-de-Silanes, and Shleifer, 1999). For example, Faccio and Lang (2002) find that 44.29 percent of firms in 13 Western European countries are family firms while one third of S&P firms can be regarded as controlled by families (Anderson & Reeb, 2003). Families and business groups are also argued to dominate corporate control in emerging markets (Silva & Majluf, 2008). As large blockholders, families present a particular case. Using their power to monitor management, family ownership may reduce the manager-owner agency problems (Fama & Jensen, 1983), yet at the same time it often gives rise to the agency conflicts between majority and minority shareholders (Shleifer & Vishny, 1997).

Importantly, families invest their own funds and therefore have a complex nexus of economic and personal motives (Andres, 2008). As large blockholders, they have the power to pursue these objectives, whether at the expense of other shareholders or not. This has been shown to both benefit and jeopardise firm performance (Anderson & Reeb, 2003; Barontini & Caprio, 2006; Andres, 2008; Jara-Bertín, López-Iturriaga, & López-de-Foronda, 2008). The latter comes, for example, from a negative corporate reputation caused by agency problems related to the expropriation of interests of minority shareholders (Delgado-García, de Quevedo-Puente, and de la Fuente-Sabate 2010). Further, families are argued to prioritise stable

cash flow in order to sustain a privileged lifestyle (Barth, Gulbrandsen, & Schone, 2005) and may forgo governance improvements in order to see the family member running the company (Andres, 2008). Conversely, Anderson, Mansi and Reeb (2003) find that family firms have lower cost of debt financing, which the authors attribute to the improved relations with bondholders due to long-term commitment. Consistent with these findings, Anderson and Reeb (2003) find that family firms perform better than non-family firms as measured by return on assets, return on equity and Tobin's Q. Therefore, the evidence of the direct impact of family ownership on corporate performance is inconclusive.

What is consistent though is that a/the prevailing undiversified character of their portfolios and invested personal wealth determines the particular focus of families on those corporate decisions which bring them direct and certain benefits. For example, families have been shown to be reluctant about pursuing new technologies (Barth et al., 2005). Consequently, they may be expected to take a particular negative stance on CSR investments compared to other blockholders. Families may also oppose CSR projects related to emission reduction or human rights as the positive outcomes have mainly societal implications while the costs are internalised by the owners, rendering measurable financial benefits for the families uncertain (Starks, 2009; Rees & Rodionova, 2012). Conversely, other more diversified large equity holders such as investment institutions rely on multiple markets and may be affected by the economic consequences of political and social instability or environmental damage caused by weak CSR (Gjessing & Syse, 2007). These blockholders may therefore resist CSR to a lesser extent. Additionally, institutions are likely to have more reputational concerns and may favour the 'goodwill' role of CSR (Godfrey et al., 2009).

Considering provisions related to corporate governance where the implications are 'internal' for the company, such as board composition, executive compensation and overall protection of shareholder rights, prior research shows that families are unlikely to welcome balanced power and low scope for discretion implied by strong internal governance (Rees & Rodionova, 2012). Conversely, diversified blockholders are more likely to favour these developments as they offer benefits in terms of reduced information asymmetry and facilitated monitoring. Taken together, prior evidence suggests that families may resist CSR more strongly than other blockholders, and we therefore predict the following relationship:

Hypothesis 2. The negative relationship between ownership and ESG is stronger for family shareholdings than for strategic blockholdings in general.

The Mediating Impact of Governance

Apart from influencing corporate performance directly, blockholders may exert their impact through governance and decision rights. Overall, we may expect that governance reduces the negative effect of blockholdings on CSR. Indeed, where managers act according to shareholder value maximisation, they may favour those CSR initiatives where the benefits are more internal (Arora & Dharwadkar, 2011; Rees & Rodionova, 2012). If managers act in line with [the] institutional theory and consider CSR as a strategic move to improve relationships with various stakeholders and sustain firm prosperity, they are likely to favour CSR in general despite the possible negative immediate impact on the firm value (Mackenzie, Rees, & Rodionova, 2013). We therefore predict the following relationship:

Hypothesis 3. Higher levels of internal governance reduce the negative impact of strategic owners on ESG.

The influence of family owners in particular is also shown to be reinforced by their impact on governance. Barth et al. (2005) find that the negative influence of family ownership on firm productivity comes more from unrestricted control rather than ownership structure per se. This could be explained, for example, by the limited inflow of managerial talent and lower motivation on the part of middle managers to outperform given limited career prospects. Conversely, some studies find that financial performance is better in firms where the CEO comes from the family, rather than in firms run by an outsider (Anderson & Reeb, 2003; Maury, 2006; Villalonga & Amit, 2006). However, these results are not very strong. For example, Anderson and Reeb (2003) show that the positive impact of active family control disappears when the ownership exceeds 30 percent while Maury (2006) finds no value benefits of family control when the minority shareholder protection is weak. Adding to the inconclusive evidence, Morck, Stangeland and Young (1998) report an association between lower financial performance and family control.

Stronger governance, such as presence of independent directors on the board (Anderson & Reeb, 2003) and outside shareholder monitoring (Maury & Pajuste, 2005) is argued to help reduce family opportunism. However, the undiversified character of family ownership, which implies concentrated attention on a particular firm, could lead to families influencing corporate decision-making beyond their impact on the governance. For example, Anderson and Reeb (2003) suggest that family control is value-enhancing in a well-regulated economy. This suggests that in order to influence corporate performance, families do not have to rely solely on their

capture of the governance system. Given their likely strong negative views on expenditures in CSR activities and concerns about control over their personal invested funds, we therefore expect the? negative influence of families on CSR to stretch beyond the impact on governance:

Hypothesis 4. The negative relationship between family ownership and ESG is less affected by the internal governance system than the relationship between strategic ownership and ESG.

RESEARCH METHOD

OLS Regression Models

The initial results are based on a pooled time-series and cross-sectional sample of international firms. Our initial approaches are based on Jo and Harjoto (2012) where we control for sample selection bias and pool the sample across countries, industries and years. We differ from Jo and Harjoto (2012) in that we control for countries, unnecessary in their single economy setting, for years and for the firm level clustering of error terms. If we omit year dummies we find statistically significant relationships that are driven by sample-wide time trends that can appear to suggest firm-specific causal relationships where none exist. If we omit controls for the firm-specific clustering of error terms we find that standard errors are inflated and our t-statistics are approximately twice those estimated when using clustering. Thus our initial models are:

$$ESG\ Score_{it} = \beta_0 + \beta_1 Strategic\ Holding_{it} + \beta_2 Family\ Holding_{it} +$$

$$\beta_3 Leverage_{it} + \beta_4 Profitability_{it} + \beta_5 Market\text{-}to\text{-}Book_{it} + \beta_6 LogMV_{it} + \beta_7 InvMills_{it} +$$

$$\Sigma c_j C_{it} + \Sigma i_k I_{it} + \Sigma y_l Y_{it} + e_{it}$$

where $ESG\ Score_{it}$ is the firms-specific assessment provided by ASSET4 for either environmental, social or governance practices, $Strategic\ Holding_{it}$ is the percentage of equity assessed as being closely held, $Family\ Holding_{it}$ is the percentage of equity held by family or employee shareholders, *Leverage*, *Profitability*, *Market-to-Book* and *LogMV* are the percentiles of long-term debt over equity, net income over book value of equity, market value of equity over book value of equity and the log of the US$ value of market capitalisation respectively. We express the leverage, profitability and market-to-book ratios as a percentile of the sample distribution to scale them in a similar way to the dependent variables that are all calculated on a zero to one hundred distribution. $InvMills_{it}$ is the inverse Mills ratio included to control for sample selection bias and C_{it}, I_{it} and Y_{it} are country, industry and year dummies. We also run the model with country and industry dummies replaced by the mean of the dependent variable for each category and find that the results are not significantly changed. This specification has various advantages and where it is not specified otherwise we report our results using country and industry means rather than dummy variables. The standard errors are clustered for firm effects.

Endogeneity and OLS Models

The model specified above is threatened by potential endogeneity. We have included the conventional control for sample selection bias and assume that this problem has been resolved. Whilst the inverse Mills ratio is usually statistically significant in our models the impact of its inclusion on the significance of the other variables is modest[i]. More problematic is the potential threat from omitted correlated variables. Here we can postulate that factors not included in our model, or not correctly specified in our model, impact on both ESG and family ownership. A common approach to dealing

with this is to include firm fixed effects and, if we ignore the issues relating to strict endogeneity, which requires inter-temporal endogeneity between the variables in the model, this could provide an informative set of results. However, for our sample the inclusion of firm fixed effects cancels all significant relationships between the explanatory variables and the dependent variable. Running a between-effects model confirms that the explanatory power of the model is driven, almost entirely, by the differences between firms and not the differences within firms. This is not unexpected given the relatively sticky nature of the variables in our model. ESG performance and equity ownership change only slowly. Nevertheless it is worthwhile retaining the panel data approach as there are many firms in our sample for which we only have results for some years and using a pooled time-series and cross-section allows us to control for year differences.

Consequently the results from our initial model need to be interpreted with caution. There remains the possibility that omitted factors are correlated with both our test variable, family-held equity, and the dependent variables, ESG scores. As we have a control variable which measures all strategic equity, that factor would have to be related to family ownership and not to other strategic equity. Even so it is worth considering what other factors might impact. Commentators on earlier versions of this paper have suggested that the direction of causality is an issue. Indeed it is quite possible that investors might be attracted or repelled by ESG performance and hence that ESG performance drives strategic ownership. Our results are consistent with strategic equity being associated with low ESG performance. If investors believe the investment in ESG includes at least a proportion of value-decreasing investments this argument is tenable. It may seem less likely for family investors, who are typically making a decision to stay with, rather than invest in, a firm but even here family

investors may be happier to stay with a firm that does not invest in value-reducing projects. Given that we might expect non-family investors such as corporations, investment institutions and pension funds to be better able to seek low ESG firms, this would bias the results against a negative coefficient on family equity holdings. However, we also investigate the possibility of identifying any negative reverse causality.

In order to investigate the direction of causality Jo and Harjoto (2012) estimate their model with lagged measure of their test variables, which in our model would be strategic, or family-held, equity, and then replace the dependent variable with the test variable and use the lagged measure of the ESG score as an explanatory variable. They interpret their results as demonstrating that governance "causes" CSR but not that CSR causes performance. However, we will find that ESG and equity holdings, and indeed the governance element of ESG and the two CSR components (social and environmental), both appear to cause the other with a significant negative coefficient on the lagged explanatory variable in each case. This is consistent with mean reverting measures of all three variables.

Quantile Regressions

Our approach assumes that if we find a negative relationship between strategic stock and ESG this could be caused by the stockholders influencing ESG performance or by ESG performance attracting such stockholders. We believe that the second possibility can be quite reliably ruled out if we can show that firms with good ESG performance are also adversely affected by family equity holdings. It is not clear how, under those circumstances, it can be argued that the family stockholders have been attracted to invest or encouraged to retain an investment by poor ESG if the ESG is in fact good.

Conditioning the sample on the dependent variable would be unreliable but we use quintile regression to test the relationship between the explanatory variables and ESG at the 25th, 50th and 75th quantiles. The median quantile mirrors the original OLS models assessment of the mean but as quantile regression minimises mean absolute errors rather than mean squared errors it serves as a useful check on the influence of outliers. It also provides an opportunity to benchmark the significance tests from the quantile regressions which are not adjusted for firm-specific clustering in the standard errors with the OLS regressions which are. The first and third quartile regressions measure the impact of family equity holdings on firms with unexpectedly low and high ESG firms respectively. If we find a significant negative coefficient on family holdings for firms at the 75th quartile it remains consistent with family holdings negatively affecting ESG. Conversely, given the relatively high level of ESG, it would be unreasonable to believe that low ESG has attracted family shareholdings.

Propensity Score Matching

Previous analysis acknowledges that omitted correlated variables may remain a source of endogeneity. We use propensity score matching as an approach which will help to rule out such explanations as unlikely. PSM matches treated firms, those with family equity holdings, against control firms, those without, but where the control and treated firms are equally likely to have had a family holding. By construction we will expect to find that both groups will be equally matched with regards to the variables included in the matching equation. Given that the control firms are a selection from the population of untreated firms with explicit matching on a set of variables, there is no a priori reason to expect that the treatment and control firms will be unbalanced with regards to any omitted correlated variable from the OLS regressions. This does

not ensure independence from omitted variables but such contamination is unlikely. It also does not prove the direction of causality – only that treated firms have different "outcomes" from the control firms. This difference may be because the outcome has caused the treatment; our use of quantile regressions is designed to test whether this is the case or not.

The following equation is used to estimate the probability that a firm will be identified as receiving treatment i.e. categorised as having high leverage, or strategic equity holdings or any of its components. Here $Treatment_{it}$ represents a zero-one variable where one indicates that the case receives treatment and zero that it does not. The control variables for leverage, return on equity, market-to-book and capitalisation are calculated as in the initial equation. The year, country and industry variables are a vector of dummies identifying each firm's membership of each category. The equation is estimated as a probit model. In this case the results for probit or logit estimation are virtually indistinguishable.

$$Treatment_{it} = \gamma_0 + \gamma_1 Leverage_{it} + \gamma_2 Profitability_{it} + \gamma_3 Market\text{-}toBook_{it} + \gamma_4 LogMV_{it} + \Sigma c_j C_{it} + \Sigma i_k I_{it} + \Sigma y_l Y_{it} + e_{it}$$

The cases that received treatment are then matched with a case, or a sample of cases, that did not receive treatment but where the probability of being classified as treated is approximately similar, defined as pr(Treatment),Y ≈ pr(Treatment),N, where pr(PRT) is the predicted value from the equation above. The treatment effect is then the difference in $ESG\ Score_{it}$ between the two cases. There are a number of ways in which cases may be matched and the statistical significance of the treatment effect estimated (Caliendo & Kopeining, 2008). The results reported in this paper are based on matching the treatment case with the five nearest neighbours by pr(Treatment), with replacement, as long as these five fall within 0.001 pr(Treatment). We use the

normal T-test of difference between two matched samples. This implies that an untreated case can be matched with more than one treated case but obviously no case will include the same matched pair. The T-test also makes no allowance for the fact that the matching probabilities are estimated. The tests were not sensitive to different matching approaches.

Sample Statistics

Table 1 contains the descriptive statistics from our sample. We use 24,873 firm years drawn from 2002 to 2012 inclusive. This sample includes 3,919 separate firms with 953 cases from 2002 rising to 3,633 in 2010 and tailing off to 1,503 in 2012. As social, environmental, governance, leverage, profitability and market-to-book are all calculated to fall between 0 and 100 the means close to 50 are to be expected. The mean strategic shareholding is 26.25 percent and the mean family shareholding 3.42 percent. If we restrict the sample to the 20,743 cases with some strategic holding we find little change in either the ESG dependent variables or the explanatory variables with only a modest rise to 31.47 percent for strategic holdings and 4.10 percent for family strategic holdings. However, when the sample is restricted to the 3,688 cases with family strategic holdings the value of the ESG variables all show a clear decline, the control variables are broadly similar, the mean for strategic holdings rises slightly to 38.56 percent and the mean family strategic holding rises to 23.08 percent. Thus, the firms with family strategic shareholdings, which are the focus of our study, typically have an estimated 23.08 percent held by the family and/or employees with, on average, another 15.48 percent held by other strategic investors.

Insert Table 1 about here

Table 2 reports the correlation matrix for the variables used in our tests. We include product moment correlations beneath the diagonal and Spearman rank correlations above, but as most of our variables are constructed so as to rule out outliers there is barely any difference between the two sets of correlations. The ASSET4 social and environmental scores are highly correlated (0.76), but the governance score is relatively modestly correlated with the social score (0.31) and the environmental score (0.17). All three scores are negatively correlated with strategic and family holdings and the correlations between the ESG outcome variables and the control variables are quite varied apart from the stable relationship between leverage and all three measures of ESG performance. The differing responses of the ESG scores to the other control variables and to the test variables suggests that the social, environmental and governance scores are rather different constructs.

Insert Table 2 about here

RESULTS

Panel Data Tests of Association

Table 3 reports our initial results of the panel data analysis of social, environmental and governance performance of our sample of firms. In models 1 to 6 we establish that the model is robust to the choice to include dummy variables for industry and country difference or to use industry and country averages. We estimate slope coefficients on strategic shareholdings which have very similar coefficients and statistical significance whether we use dummies (Model 1: β=-0.07, $p<0.001$, Model 2: β=-0.09, $p<0.001$, Model 3: β=-0.14, $p<0.001$) or averages (Model 4: β=-0.06, $p<0.001$, Model 5: β=-0.8, $p<0.001$, Model 6: β=-0.13, $p<0.001$) and in all later tests

we use averages. In models 7, 8 and 9 we add the family holding variable to investigate whether family holdings have an association with ESG performance beyond that explained by strategic holdings. The slope coefficients on strategic holdings are slightly reduced but remain negative and statistically significant (Model 7: β=-0.04, $p<0.001$, Model 8: β=-0.06, $p<0.001$, Model 9: β=-0.11, $p<0.001$) whilst the additional impact of family holdings is strongly negative and statistical significant in all three models (Model 7: β=-0.15, $p<0.001$, Model 8: β=-0.14, $p<0.001$, Model 9: β=-0.15, $p<0.001$). It should be noted that the full relationship between the ESG variables and family holdings is the sum of the slope coefficients on both strategic holdings, which includes family holdings, and family holding itself. The mean of the percentage held by families, if they have a holding at all, as reported in Table 1, is 23 percent, which implies that firms with family ownership typically have 4.37 points less on their social score (0.23*(-4-15)), 4.6 points less on environmental (0.23*((-6-14)) and 5.98 points less on governance (0.23*(-11-15)). In each case the mean score is standardised at 50 so approximately 10 percent of a firm's typical score can be affected by the average family equity holding.

Insert Table 3 about here

In the final two models in Table 3 we examine whether governance intervenes between the ownership characteristics and the social and environmental performance by including governance as an explanatory variable. Thus we hypothesise that ownership may impact on governance which impacts on social and environmental performance but it is unclear whether ownership will impact on performance beyond its influence via governance. Our hypothesis is that family owners are more likely than other strategic equity holders to be involved in management of the firm and we expect a stronger relationship between ownership and social and environmental

performance for family owners, after controlling for governance, than for other strategic shareholders. In models 9 and 10 we observe a strong positive relationship between governance and social and environmental performance (Model 10: β=0.25, $p<0.001$, Model 11: β=0.26, $p<0.001$), no remaining relationship between strategic shareholdings and either dependent variable (Model 10: β=0.00, insignificant, Model 11: β=-0.01, insignificant), but a strong negative association between family ownership and both social and environmental performance (Model 10: β=-0.09, $p<0.01$, Model 11: β=-0.09, $p<0.001$).

The results reported in Table 3 show a robust negative association between family strategic shareholdings and a firm's social, environmental and governance performance after controlling for strategic shareholdings in total, industry, country and year differences and firm-specific estimates of leverage, profitability, market-to-book and capitalisation. These offer support for hypothesis one, that strategic equity holdings reduce ESG, hypothesis two, that family strategic holdings have a stronger negative impact than general strategic holdings, hypothesis three, that allowing for the influence of governance reduces the direct impact of strategic holdings on social and environmental scores, and hypothesis four, that such mitigating impact is less strong for the influence of family strategic holdings. However, such tests cannot demonstrate the direction of causality nor rule out the possibility of omitted correlated variables. In the following sections we first investigate the impact of causality and then that of omitted variables.

Testing Causality Using Quantile Regressions

We have argued that it is unlikely that family investors would be attracted by low ESG performance. Typically family investors gradually reduce their investment but

even then it is possible that they could be less likely to sell if the firm has low ESG. But for these firms with higher than normal ESG we cannot argue that low ESG is attracting or retaining family investors. Whilst this may be an unusual use of quantile regressions we are able to estimate the relationship between family ownership and ESG at different quantiles and in this instance we test the 25^{th} and 75^{th} quantiles.

Insert Table 4 about here

In Table 4 we report the results for a re-estimation of models 7, 8, 9, 10 and 11 of Table 3 for both the 25^{th} quantile (models 1 to 5) and the 75^{th} quantile (models 6 to 10). In these quantiles we are unable to adjust our significance tests for clustering by firm. However, by re-estimating the results from Table 3 for the 50^{th} quantile (see appendix 1) and comparing these with the slope coefficient estimates and standard errors we are able to estimate the realistic level of overstatement in the reported t-statistics. The slope coefficients are generally very similar from the OLS and quantile regression but the t-statistics can vary from approximate equality to approximately twice as large. Thus, to be conservative, we would not treat any slope coefficient not associated with a t-statistic of at least twice that normally considered critical to be reliably statistically significant. (To avoid confusion we use the statistical results as generated by the statistical models in our discussion.)

In Table 4 we report slope coefficients on strategic shareholdings for the 25^{th} percentile in models of social, environmental, governance performance and then social and environmental performance with governance as an independent variable which are negative and significant in the first three cases and insignificantly different from zero in the later two (Model 1: β=-0.06, $p<0.001$, Model 2: β=-0.04, $p<0.001$, Model 3: β=-0.17, $p<0.001$, Model 4: β=-0.02, $p<0.1$, Model 5: β=0.01, insignificant). The equivalent results for the 75^{th} quantile are broadly similar save that

the coefficient on strategic shareholdings in the regression modelling of governance is somewhat lower than for the 25th quantile (Model 6: β=-0.04, p<0.001, Model 7: β=-0.06, p<0.001, Model 8: β=-0.05, p<0.001, Model 9: β=-0.00, insignificant, Model 10: β=-0.02, p<0.05).

However, our analysis is focused on family shareholdings and for the 25th percentile we report significant negative coefficients for the models of social, environmental and governance performance and insignificant, or barely significant, negative coefficients when governance is included as an explanatory variable (Model 1: β=-0.10, p<0.001, Model 2: β=-0.10, p<0.001, Model 3: β=-0.17, p<0.001, Model 4: β=-0.03, insignificant, Model 5: β=-0.03, p<0.1). However, in all cases for the 75th quantile we estimate negative slope coefficients that are robustly significant (Model 6: β=-0.16, p<0.001, Model 7: β=-0.15, p<0.001, Model 8: β=-0.16, p<0.001, Model 9: β=-0.09, p<0.001, Model 10: β=-0.12, p<0.001). Model 8 has roughly the same coefficient for both quantiles; in models 6,7,9 and 10 the results for the 75th quantile are more negative. If the reverse causality story were true we would expect the results to be stronger for the 25th quantile.

Propensity Score Matching Tests of Association

Unlike the quantile regressions, propensity score matching cannot comment on the direction of causality. However, the test attempts to simulate a randomised experiment that explicitly equalises the distribution of those variables used in the calculation of the propensity scores. Thus, we find that the firm-specific variables used do indeed have similar means across out treatment and control groups (see Appendices 2 and 3). Further, advocates of propensity score matching suggest that we can expect other variables to be randomly distributed between the two groups. We

also find that industry, country and year averages of the dependent variables are indistinguishable between our treatment and control groups and these values have not been used in the construction of the propensity scores. Thus we have no reason to suppose that there are correlated omitted variables excluded from our model. Our results show that we have treatment firms (with family strategic shareholdings of more than 10 percent) and control firms (with family strategic shareholdings of less than 10 percent) which are indistinguishable on all other observable variables. However, we do not view this as demonstrating causality as the test variable may have caused the treatment or the treatment the test variable.

Insert Table 5 about here

In Table 5 we report six different propensity score matching tests. In the first three we match treated cases with a) all other cases, b) cases which have significant (greater than 10 percent) strategic holdings apart from family holdings, and c) cases which have no such other significant holdings. For these tests propensity scores have been calculated using leverage, profitability, market-to-book, the log of capitalisation and industry, country and year dummies. For the second set of three tests we repeat the experiment but include governance as an extra variable in the propensity score matching. We report only the version of the tests that can be used to investigate the significance of the difference between the treatment and control groups. We estimate the control value using the average of the five control cases that come closest to the treatment case in propensity score as long as those five fall within 0.001 of the treatment case score. If we cannot identify five matching firms the case is discarded. As is usual with propensity score matching we have used a number of alternative estimation techniques and find our results insensitive to the approach used.

In Table 5 we estimate the difference in the environmental, social and governance scores between the treatment and control groups. In model 1, where all firms are included, we find the difference is negative and strongly significant for all three outcomes (Model 1a Δ=-5.45, $p<0.001$, Model 1b Δ=-6.13, $p<0.001$, Model 1c Δ=-6.55, $p<0.001$). These magnitudes are similar to those implied by the OLS regression analysis conducted earlier. For the results where we restrict the control group to other firms with strategic holdings the results remain significantly negative but slightly smaller (Model 2a Δ=-4.61, $p<0.001$, Model 2b Δ=-5.01, $p<0.001$, Model 2c Δ=-4.03, $p<0.001$) and for firms without other strategic holdings slightly larger (Model 3a Δ=-6.98, $p<0.001$, Model 3b Δ=-7.57, $p<0.001$, Model 1c Δ=-11.07, $p<0.001$). As we estimated a negative reaction between strategic holdings in general and ESG these results are to be expected.

In the models 4, 5 and 6 we include governance in the propensity score model as an approximate equivalent to the earlier regression models where we sought to estimate the impact of family strategic shareholdings beyond the influence of governance. Naturally, the model should result in approximate parity between the governance score for the treatment and control groups and this is indeed what we find. Thus, in model 4 using all cases to construct the control group we find statistically significant negative treatment effects, although weaker than in model 1 (Model 4a Δ=-2.59, $p<0.01$, Model 4b Δ=-3.43, $p<0.001$, Model 4c Δ=-0.60, insignificant). When we restrict the control group to firms with strategic shareholdings we find a similar and significant negative effect to that estimated in model 4 (Model 5a Δ=-3.33, $p<0.001$, Model 5b Δ=-4.51, $p<0.001$, Model 5c Δ=-0.61, insignificant). Finally, we use only firms with no other strategic shareholding to form the control group and here our results are somewhat weaker with only the test of environmental score statistically

significant (Model 6a Δ=-1.16, insignificant, Model 6b Δ=-2.43, $p<0.01$, Model 6c Δ=-0.61, insignificant).

It is not clear to us why this final result should occur. We have three groups of firms: those with family holdings of more than 10%, those with other strategic holdings of more than 10 percent and those with staretgic holdings of less than 10 percent. We had expected that firms without any strategic shareholdings would be more different from those with family holdings than those with other strategic holdings. This is the result we found when running the third test in Table 5. However, after allowing for the impact of governance the change in the results is clear. When we contrast the environmental and social performance of firms with strategic family shareholdings with those that have no other strategic shareholdings there is only a modest difference that is insignificant for social performance and marginally significant for environmental performance. However, this is consistent with the results derived from the 25th quantile regression analysis in table 4. It would seem that in general the impact of family strategic holdings on social and environmental performance is largely accounted for by the transmission effect via the impact of governance.

Given the results of our initial panel data regressions, the quantile regressions and the propensity score analysis we find our results consistent with all four hypotheses. Strategic holdings appear to reduce ESG; family strategic holdings do so more powerfully; conditioning for the direct influence of governance reduces the impact of strategic holdings - in fact it negates it; and conditioning for the influence of governance reduces but typically does not negate the impact of family strategic holdings.

Country Analysis

We run country-specific regression for thirteen countries with the largest samples, the smallest of which is 334 firm/years. The power of the test is fairly weak as the industry categories include 38 dummies. However, the country-specific regressions also confirm the overall statistical significance of our full sample tests. The distribution of coefficients is of interest. When modelling the social score strategic shareholdings are negative for Australia, Hong Kong, Sweden, Switzerland, the UK and the USA but not for Canada, France, Germany, Italy, Japan, Singapore or Spain. When modelling the environment score Germany switches to negative, as does Spain. When we examine the impact of family strategic holdings all bar France and Germany are negative for social score and all bar Germany and Singapore for the environment score. The results for governance are rather more clear-cut. The impact of strategic holdings is always positive save for Italy, which is effectively zero, and the impact of family holdings is always negative, again except for Italy. This does not mean that family holdings have a negative influence on governance, but that strategic holdings excluding the family portion have a positive impact.

We have also investigated the difference between the results for categories of countries such as code versus common law or co-ordinated market economies versus liberal market economies. We can identify differences according to these dichotomies, most notably in the impact of strategic shareholdings. However, the discussion above reveals that this classification is more apparent than real and is largely driven by the large samples from Japan and the USA. What we can confirm is that for almost all countries, after controlling for the total strategic holdings family strategic holdings is negatively associated with all of social, environmental and

governance scores. The one country that is perhaps unusual is Germany. For this country we estimate a positive and statistically significant relationship between family shareholdings and both the environment and social scores. These results offers a route for further analysis and the work of Kang and Moon (2012) suggests that the result for Germany should not be altogether unexpected.

Sensitivity Analysis

We re-estimate the basic models using the Datastream measure of closely-held stock rather than the strategic holdings estimate. This measure is broadly similar to the strategic measure but has been available for longer and has been based on a consistent definition throughout our sample period. It is, however, not uniformly defined across countries but as we control for country difference this should not be crucial. We also re-estimate the models reported in table 3 using quantile regressions which are less sensitive to outliers. Whether using closely-held or strategic shareholdings or using OLS or quantile regressions the results are robust.

We also look at sub-scores of the three ASSET4 ESG measures. Whilst we have access to further components, and indeed to the components that ASSET4 use to generate their scores, we prefer to use the main scores published by ASSET4, which are presumably designed to meet demand from investment institutions, and to avoid any possible data-mining bias which might come from hunting through the components. Corporate governance has five components: board structure, board functions, compensation policy, shareholder rights and vision and strategy. All are significantly negatively associated with strategic shareholdings and all bar compensation policy are additionally significantly negatively associated with strategic family holdings. All bar board function have a significant and positive impact on the

social score and all bar board function and compensation policy have a significant positive impact on the environmental score. The social score has seven dimensions: community, diversity and opportunity, employment quality, health and safety, human rights, product responsibility and training and development. Only diversity and opportunity, human rights and product responsibility have a significant negative association with total strategic holdings whereas all but human rights and product responsibility have an additional significant negative relationship with strategic family holdings. The environmental score has three components: emission reduction, product innovation and resource reduction. All three are significantly negatively associated with both strategic and with family holdings. Taken together these sensitivity results suggest that the main results reported in Table 3 are supported by more detailed analysis. There are differences in the strength of the relationship across components, and although Rees and Rodionova (2012) have made a preliminary analysis, it would be interesting to investigate this further. However, the overall story remains the same: strategic shareholdings are associated with lower ESG scores in general and in general family strategic holdings have an additional negative association.

DISCUSSION AND CONCLUSION

It can be argued that undiversified shareholders, such as family equity holders, will oppose ESG investment as at least a proportion of that investment may be value-destroying. Thus, significant family shareholders may have both the influence and incentive to resist ESG investment. Conversely, it could be argued that family shareholders may be more committed to the interests of other stakeholders with whom

they may have had a long-term association. In that case they could be more willing to support value-destroying ESG given the benefits to other stakeholders. Using a large and recent international sample we show that strategic shareholdings are associated with lower ESG performance and that this is particularly true for family shareholdings. This is consistent with family shareholders discouraging ESG investment but it is also consistent with low ESG performance encouraging family investors to retain their shareholding. In a panel data regression model, where the variables of interest are stable within firms across time, it is very difficult to demonstrate that the models are not contaminated by endogeneity. In particular it is difficult to demonstrate the direction of causality.

Our propensity score matching tests are less likely to be affected by omitted variables as they represent an attempt to mimic random allocation. Whilst not definitively free of contamination they offer support for the prediction that there is a negative relationship between family equity holdings and ESG. Furthermore by using quantile regressions to test the influence of family equity on ESG for firms which have good ESG performance, and again finding a negative relationship, we show that the negative relationship holds where it is difficult to argue that low ESG has encouraged family stockholders to retain their holding. Overall our results remain consistent with strategic equity holders, and family shareholders in particular, discouraging ESG performance.

Our study has also investigated the relationship between environmental and social CSR and strategic stockholdings via corporate governance. In the main we find that strategic equity holdings have little impact on social and environmental performance once governance has been accounted for. Thus strategic holdings may impact on social and environmental performance but only via their impact on

governance. Conversely, we find that family strategic shareholdings may impact on social and environmental scores even after allowing for the intervening effect of governance. This result is less robust than the direct impact estimated without an intervening governance variable but is consistent with family equity holders influencing the social and environmental performance directly.

Throughout we have assumed that the ASSET4 measures of social, environmental and governance performance are indicative of underlying performance. Previous work has shown ASSET4 scores to be highly correlated with other measures on ESG performance such as FTSE4Good or Risk Metrics (previously KLD). If these scores do reflect underlying performance we would argue that these are important constructs. The environmental threat is clear, the social performance of firms is an issue of increasing importance and the failures of corporate governance are cited as being partly behind the recent and continuing economic crisis. Under these circumstances regulators, governments and stakeholders will be concerned to improve firms' ESG performance. Our results suggest that particular attention may need to be paid to firms with substantial strategic shareholdings. The implications of our results are that, should we wish to improve ESG, diversified shareholding should be encouraged or regulations and institutions established to improve the performance of firms with substantial strategic holdings.

REFERENCES

Aguilera, R. V., C. A. Williams, J. M. Conley, and D. E. Rupp. 2006. Corporate Governance and Social Responsibility: A Comparative Analysis of the UK and the US. ***Corporate Governance: An International Review***, 14: 147–158.

Anderson, R. C. and D. M. Reeb, 2003. Founding-Family Ownership and Firm Performance: Evidence from the S&P 500. ***The Journal of Finance***, 58: 1301–1327.

Anderson, R. C., S. A. Mansi, and D. M. Reeb. 2003. Founding Family Ownership and the Agency Cost of Debt. ***Journal of Financial Economics***, 68: 263-285.

Andres, C. 2008. Large Shareholders and Firm Performance – An Empirical Examination of Founding-Family Ownership. ***Journal of Corporate Finance***, 14: 431-445.

Armstrong, C. A., A. D. Jagolinzer, and D. F. Larcker: 2010. Chief Executive Officer Equity Incentives and Accounting Irregularities. ***Journal of Accounting Research***, 48(2): 225-271.

Arora, P. and R. Dharwadkar. 2011. Corporate Governance and Corporate Social Responsibility (CSR): The Moderating Roles of Attainment Discrepancy and Organization Slack. ***Corporate Governance: An International Review***, 19: 136-152.

Bansal, P. and K. Roth. 2000. Why Companies Go Green: a Model of Ecological Responsiveness. ***Academy of Management Journal***, 43: 717-736.

Barnea, A. and Rubin, A. 2010. Corporate Social Responsibility as a Conflict between Shareholders. ***Journal of Business Ethics***, 97: 71-86.

Barnett, M. L.. and R. M. Salomon. 2006. Beyond Dichotomy: the Curvilinear Relationship between Social Responsibility and Financial Performance. ***Strategic Management Journal***, 27: 1101-1122.

Barontini, R. and L. Caprio. 2006. The Effect of Ownership Structure and Family Control on FirmValue and Performance. Evidence from Continental Europe. ***European Financial Management***, 12: 689–723.

Barth, E., T. Gulbrandsen, and P. Schone. 2005. Family Ownership and Productivity: the role of Owner-Management. ***Journal of Corporate Finance***, 11: 107-127.

Becker-Olsen, K. L., B. A. Cudmore, and R. P. Hill. 2006. The Impact of Perceived Corporate Social Responsibility on Consumer Behaviour. ***Journal of Business Research***, 59(1): 46-53.

Bénabou, R. and Tirole, J. 2010. Individual and Corporate Social Responsibility, ***Economica***, 77: 1-19.

Berry, M. A. and D. A. Rondinelli. 1998. Proactive Corporate Environmental Management: a New Industrial Revolution. ***Academy of Management Executive***, 12: 38-50.

Brekke, K. A. and K. Nyborg. 2008. Attracting Responsible Employees: Green Production as Labour Market Screening. ***Resource and Energy Economics***, 30: 509-526.

Burkart, M., D. Gromb, and F. Panunzi. 1997. Large Shareholders, Monitoring and the Value of the Firm. ***Quarterly Journal of Economics***, 112: 693-728.

Caliendo, M. and S. Kopeinig. 2008. Some Practical Guidance for the Implementation of Propensity Score Matching. ***Journal of Economic Surveys***, 22(1): 31-72.

Cespa, G., and G. Cestone. 2007. Corporate Social Responsibility and Managerial Entrenchment. ***Journal of Economics and Management Strategy***, 16: 741–771.

Cheng, B., I. Ioannou, and G. Serafeim. 2011. ***Corporate Social Responsibility and Access to Finance***. Working Paper, Harvard Business School, Soldiers Field, Boston, Massachusetts.

Chung, H. and T. Talaulicar. 2010. Forms and Effects of Shareholder Activism. ***Corporate Governance: An International Review***, 18(4): 253-257.

Clark, G. L. and Hebb, T., 2005. Why Should they Care? The Role of Institutional Investors in the Market for Corporate Global Responsibility. ***Environment and Planning A***, 37: 2015–2031.

Cox, P., S. Brammer, and A. Millington. 2004. An Empirical Examination of Institutional Investor Preferences for Corporate Social Performance. ***Journal of Business Ethics***, 52: 27-43.

Delgado-Garcıa, J. B., E. de Quevedo-Puente, and J. M. de la Fuente-Sabate. 2010. The Impact of Ownership Structure on Corporate Reputation: Evidence from Spain. ***Corporate Governance: An International Review***, 18: 540-556.

Demsetz H. and B. Villalonga. 2001. Ownership Structure and Corporate Performance. ***Journal of Corporate Finance***, 7: 209-233.

Demsetz, H. and K. Lehn. 1985. The Structure of Corporate Ownership: Causes and Consequences. ***Journal of Political Economy***, 93: 1155-1177.

Dimson, E., O. Karakaş, and X. Li. 2012. ***Active Ownership***. Working Paper. Available at SSRN: http://ssrn.com/abstract=2154724. Accessed on 7th October 2012.

Faccio, M. and L. H. P. Lang. 2002. The Ultimate Ownership of Western European Corporations. ***Journal of Financial Economics***, 65: 365-395.

Faccio, M., L. H. P. Lang, and L. Young. 2001. Dividends and Expropriation. ***American Economic Review***, 91: 54-78.

Fama, E. and M. Jensen. 1983. Separation of Ownership and Control. ***Journal of Law and Economics***, 26: 301-326.

Fisman, R., G. Heal, and V. Nair. 2006. ***A Model of Corporate Philanthropy***. Working Paper, Columbia University, 3022 Broadway, New York, NY 10025.

Gjessing, O. P. K. and H. Syse. 2007. Norwegian Petroleum Wealth and Universal Ownership. ***Corporate Governance: An International Review***, 15: 427-437.

Godfrey, P. C., C. B. Merrill, C. B., and J. M. Hansen. 2009. The Relationship between Corporate Social Responsibility and Shareholder Value: an Empirical Test of the Risk Management Hypothesis. ***Stratetic Management Journal***, 30: 425-445.

Hart, S. L. and G. Ahuja, G. 1996. Does It Pay to be Green? An Empirical Examination of the Relationship Between Emission Reduction and Firm Performance. ***Business Strategy and the Environment***, 5: 30-37.

Ioannou, I. and G. Serafeim. 2010. ***What drives corporate social performance? International evidence from social, environmental and governance scores***. Working Paper, Harvard Business School, 11-016.

Jara-Bertín, M., F. J. López-Iturriaga, and O. López-de-Foronda. 2008. The Contest to the Control in European Family Firms: How Other Shareholders Affect Firm Value. ***Corporate Governance: An international Review***, 16: 146-159.

Jensen, M.C. and W. H. Meckling. 1976. Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure. ***Journal of Financial Economics***, 3: 305–360.

Jo, H. and M. A. Harjoto. 2011. Corporate Governance and Firm Value: The Impact of Corporate Social Responsibility. ***Journal of Business Ethics***, 103(3): 351-383.

Jo, H. and M. A. Harjoto. 2012. The Causal Effect of Corporate Governance on Corporate Social Responsibility. ***Journal of Business Ethics***, 106: 53-72.

Jones, T. M., 1995. Instrumental stakeholder theory: A synthesis of ethics and economics. ***Academy of Management Review***, 20. 404-437.

Karkkainen, B. C. 2001. Information as Environmental Regulation: TRI and Performance Benchmarking, Precursor to a New Paradigm? ***The Georgetown Law Journal***, 89: 257-370.

Kang, N.; Moon, J. 2012. Institutional Complementarity between Corporate Governance and Corporate Social Responsibility: A Comparative Institutional Analysis of Three Capitalisms., ***Socio-Economic Review***, 10: 85-108.

La Porta,R., F. Lopez-de-Silanes, and A. Shleifer. 1999. Corporate Ownership around the World. ***Journal of Finance***, 54: 471–518 .

La Porta, R. F., F. Lopez-de-Silanes, A. Shleifer, and R. Vishny. 2000. Investor Protection and Corporate Governance. ***Journal of Financial Economics***, 58: 3-27.

Lydenberg, S. 2007. Universal Investors and Socially Responsible Investors: A Tale of Emerging Affinities. ***Corporate Governance: An International Review***, 15: 467-477.

Mackenzie, C., W. Rees, and T. Rodionova. 2013. Do Responsible Investment Indices Improve Corporate Social Responsibility? FTSE4Good's Impact on Environmental Management. ***Corporate Governance: An International Review***, 21: 495-512.

Margolis, J. D., H. A. Elfenbein, and J. P. Walsh. 2007. ***Does It Pay to Be Good? A Meta-Analysis and Redirection of Research on the Relationship between Corporate Social and Financial Performance***. Working Paper, Harvard University, Cambridge, MA.

Maury, B. Family Ownership and Firm Performance: Empirical Evidence from Western European Corporations. ***Journal of Corporate Finance***, 12: 321-341.

Maury, B. and A. Pajuste. 2005. Multiple Large Shareholders and Firm Value. ***Journal of Banking and Finance***, 29: 1813–1834.

McWilliams, A. and D. Siegel. 2001. Corporate Social Responsibility: a Theory of the Firm Perspective. ***The Academy of Management Review***, 26: 117-127.

Morck, R., D. Stangeland, and B. Young. 1998. ***Inherited Wealth, Corporate Control, and Economic Growth, The Canadian disease?*** NBER Working paper 6814. National Bureau of Economic Research. Cambridge, MA, USA.

Orlitzky, M., F. U. Schmidt, and S. L. Rynes. 2003. Corporate Social and Financial Performances: A Meta-Analysis. ***Organizational Studies***, 24: 403-41.

Porter, M. E. and C. van der Linde. 1995. Toward a New Conception of the Environment-Competitiveness Relationship. ***Journal of Economic Perspective*s**, 9: 97-118.

Rees, W. and C. Mackenzie. 2011. **Corporate Social Responsibility and the Open Society**. Working Paper. Available at SSRN: http://ssrn.com/abstract=1966030. Accessed on 20th October 2012.

Rees, W. and T. Rodionova. 2012. What Type of Controlling Investor Impact on Which Elements of Corporate Social Responsibility? ***Journal of Sustainable Finance and Investment***, iFirst article: 1-27.

Renneboog, L., J. Ter-Horst, and C. Zhan. 2008. Socially Responsible Investments: Institutional Aspects, Performance, and Investor Behaviour. ***Journal of Banking and Finance***, 32: 1723-1742.

Rosenbaum, P. and D. Rubin. 1983. The Central Role of the Propensity Score in Observational Studies for Causal Effects. ***Biometrika***, 70(1): 41-55.

Shleifer, A. and R. W. Vishny. 1997. A Survey of Corporate Governance. ***Journal of Finance***, 52: 737-783.

Siegel, D. S. and Vitaliano, D. F., 2007. An empirical analysis of the strategic use of corporate social responsibility. ***Journal of Economics & Management Strategy***, 16. 773-792.

Silva, F. and N. Majluf. 2008. Does Family Ownership Shape Performance Outcomes? ***Journal of Business Research***, 609-614.

Solomon, A., J. Solomon, and M. Suto. 2004. Can the UK Experience Provide Lessons for the Evolution of SRI in Japan? ***Corporate Governance: An International Review***, 12: 552-566.

Starks, L. T. 2009. Corporate Governance and Corporate Social Responsibility: What Do Investors Care About? What Should Investors Care About? ***Financial Review***, 44: 461-468.

Stephan, M. 2002. Environmental Information Disclosure Programs: They Work, but Why? ***Social Science Quarterly***, 83: 190-205.

Turban, D. B. and D. W. Greening. 1997. Corporate Social Performance and Organizational Attractiveness to Prospective Employees. ***Academy of Management Journal***, 40(3): 658-672.

Villalonga, B. and R. Amit. 2006. How Do Family Ownership, Control, and Management Affect Firm Value? ***Journal of Financial Economics***, 80: 385–417.

TABLE 1
Descriptive Statistics

	social	environment	governance	strategic	family	leverage	profitability	MTB	Log(MV)
All									
Mean	50.99	50.71	52.94	26.25	3.42	51.94	51.03	50.38	15.38
Std. Dev	30.85	31.97	30.06	23.27	10.93	28.63	28.41	28.79	1.34
p25	21.11	17.44	23.87	7.00	0.00	29.00	27.00	25.00	14.54
p50	50.48	48.03	60.87	20.00	0.00	53.00	51.00	50.00	15.31
p75	81.62	84.75	79.31	43.00	0.00	76.00	76.00	75.00	16.21
N	24873	24873	24873	24873	24873	24873	24873	24873	24873
If strategic > 0									
Mean	50.35	49.52	53.29	31.47	4.10	51.58	51.38	51.12	15.33
Std. Dev	30.66	31.73	29.49	22.02	11.85	28.78	28.56	28.89	1.31
p25	20.84	17.28	25.92	13.00	0.00	28.00	27.00	26.00	14.51
p50	48.90	45.17	60.87	26.00	0.00	52.00	52.00	52.00	15.28
p75	80.72	83.10	78.85	49.00	0.00	76.00	76.00	76.00	16.14
N	20743	20743	20743	20743	20743	20743	20743	20743	20743
If family >0									
Mean	45.67	44.15	45.11	38.56	23.08	48.13	53.77	53.54	15.05
Std. Dev	29.87	30.48	29.14	19.91	18.77	30.05	28.80	29.92	1.35
p25	17.99	16.36	16.30	22.00	8.00	22.00	30.00	26.00	14.17
p50	41.17	34.35	46.67	36.00	17.00	48.00	57.00	56.00	14.99
p75	73.13	74.85	71.47	54.00	33.00	74.00	79.00	80.00	15.94
N	3688	3688	3688	3688	3688	3688	3688	3688	3688

Descriptive statistics are presented for the full sample, for a sub-sample for which strategic equity holdings are assessed as greater than zero and a second sub-sample for which family equity holdings are assessed as greater than zero. The social, environment and governance variables are the ASSET4 assessment of the firms performance on each of those dimensions, strategic and family are the Datastream measure of strategic holdings in total and those strategic holdings attributable to family or employees, leverage, profitability and market-to-book are the cross sample percentiles of each variable where the original ratios are calculated as long-term debt over long-term debt plus equity, net income over equity

and market value of equity over the book value of equity. The log of market capitalization is calculated using US$ values.

TABLE 2
Correlation Matrix

	social	environment	government	strategic	family	leverage	profitability	MTB	Log(MV)
social	1.00	0.75***	0.35***	-0.06***	-0.07***	0.12***	0.12***	0.03***	0.41***
environment	0.76***	1.00	0.20***	-0.12***	-0.09***	0.10***	0.03***	-0.06***	0.34***
governance	0.31***	0.17***	1.00	-0.13***	-0.12***	0.11***	0.11***	0.14***	0.18***
strategic	-0.05***	-0.12***	-0.15***	1.00	0.27***	-0.03***	0.06***	0.07***	-0.04***
family	-0.06***	-0.08***	-0.13***	0.30***	1.00	-0.05***	0.04***	0.05***	-0.10***
leverage	0.12***	0.12***	0.11***	-0.03***	-0.04***	1.00	-0.06***	-0.09***	0.08***
profitability	0.12***	0.03***	0.11***	0.06***	0.05***	-0.07***	1.00	0.55***	0.25***
MTB	0.02***	-0.08***	0.14***	0.06***	0.05***	-0.10***	0.55***	1.00	0.21***
Log(MV)	0.41***	0.35***	0.16***	-0.02***	-0.06***	0.08***	0.26***	0.21***	1.00

The correlation matrix presents the product moment and Spearman correlation statistics between the variables as used in our regression and propensity score matching models.

+p<.10
*p<.05
**p<.01
***p<.001

TABLE 3
Tests of Association Between Strategic and Family Equity Holdings and Social, Environmental and Governance Performance

DV =	Model 1 soc	Model 2 env	Model3 gov	Model 4 soc	Model 5 env	Model 6 gov	Model 7 soc	Model 8 env	Model 9 gov	Model 10 soc	Model 11 env
Governance										0.25***	0.26***
										(21.33)	(22.03)
Strategic	-0.07***	-0.09***	-0.14***	-0.06***	-0.08***	-0.13***	-0.04**	-0.06***	-0.11***	0.00	-0.01
	(5.09)	(6.57)	(12.11)	(4.40)	(5.61)	(12.79)	(2.65)	(3.89)	(9.98)	(0.27)	(0.64)
Family							-0.15***	-0.14***	-0.15***	-0.09**	-0.09***
							(5.32)	(4.75)	(6.93)	(3.25)	(3.37)
Leverage	0.09***	0.10***	0.05***	0.05***	0.06***	0.04***	0.05***	0.06***	0.04***	0.02*	0.03**
	(7.13)	(7.94)	(6.38)	(4.60)	(5.54)	(5.73)	(4.49)	(5.47)	(5.64)	(2.06)	(2.95)
Profitability	0.01	0.02	-0.02*	0.03***	0.03**	-0.00	0.04***	0.03**	0.00	0.03**	0.02*
	(1.30)	(1.53)	(2.07)	(3.34)	(3.09)	(0.06)	(3.48)	(3.25)	(0.19)	(2.71)	(2.44)
MTB	-0.08***	-0.13***	-0.01	-0.05***	-0.09***	-0.01	-0.05***	-0.09***	-0.01	-0.09***	-0.12***
	(6.61)	(10.10)	(1.39)	(4.06)	(7.30)	(1.22)	(3.88)	(7.13)	(0.96)	(7.42)	(9.61)
Log(MV)	11.09***	11.29***	5.26***	7.81***	7.46***	3.82***	7.71***	7.37***	3.68***	7.14***	7.17***
	(35.81)	(37.13)	(22.93)	(27.76)	(26.70)	(18.63)	(27.44)	(26.30)	(17.92)	(26.43)	(26.91)
Industry	Y	Y	Y	0.61***	0.76***	0.20***	0.60***	0.75***	0.20***	0.60***	0.75***
				(15.80)	(26.38)	(6.29)	(15.62)	(26.17)	(6.34)	(16.37)	(27.50)
Country	Y	Y	Y	0.88***	0.82***	0.99***	0.89***	0.83***	0.99***	0.90***	1.06***

				(30.19)	(26.68)	(101.83)	(30.66)	(27.07)	(101.88)	(33.24)	(35.95)
Mills	0.66	3.25***	7.79***	-7.71***	-6.65***	0.22	-8.09***	-6.94***	-0.30	-7.13***	-1.95
	(0.70)	(3.76)	(9.47)	(6.76)	(6.13)	(0.25)	(7.10)	(6.39)	(0.34)	(6.52)	(1.89)
N	24873	24873	24873	24873	24873	24873	24873	24873	24873	24873	24873
R-sq	0.414	0.456	0.650	0.367	0.404	0.632	0.369	0.406	0.635	0.422	0.452

This table presents the results of OLS regressions of ESG performance for the period 2002 to 2012 where the dependent variable is social (soc), environmental (env) and governance (gov) performance as assessed by ASSET4 and the test variables are strategic equity holdings, family equity holdings (models 7 to 10 only) and governance (models 9 and 10 only). Control variables are leverage, profitability, market-to-book and the log of capitalisation, industry and country dummies (models 1 to 3) industry and country averages of the dependent variable (models 4 to 10), the inverse Mills ratio and year dummies (unreported). T-statistics are calculated using company clustered standard errors.

+p<.10
*p<.05
**p<.01
***p<.001

TABLE 4
Quantile Regressions Models of Strategic and Family Equity Holdings on Social, Environmental and Governance Performance

	25th Percentile						75th Percentile			
DV =	Model 1 soc	Model 2 env	Model3 gov	Model 4 soc	Model 5 env	Model 6 soc	Model 7 env	Model 8 gov	Model 9 soc	Model 10 env
governance				0.29***	0.28***				0.24***	0.26***
				(40.34)	(42.71)				(32.05)	(34.29)
strategic	-0.06***	-0.04***	-0.17***	-0.02+	0.01	-0.04***	-0.06***	-0.05***	0.00	-0.02*
	(6.45)	(4.28)	(25.38)	(1.90)	(0.78)	(4.08)	(6.14)	(8.93)	(0.07)	(2.07)
family	-0.10***	-0.10***	-0.17***	-0.03	-0.03+	-0.16***	-0.15***	-0.16***	-0.09***	-0.12***
	(4.83)	(5.30)	(12.10)	(1.26)	(1.87)	(7.61)	(7.26)	(13.31)	(4.43)	(5.75)
Leverage	0.05***	0.04***	0.01*	0.01+	0.02*	0.05***	0.08***	0.05***	0.03***	0.03***
	(6.46)	(5.59)	(1.98)	(1.86)	(2.24)	(6.74)	(10.54)	(10.82)	(4.27)	(4.06)
profitability	0.05***	0.03***	-0.00	0.05***	0.04***	0.03***	0.02*	0.01**	0.02*	0.00
	(5.54)	(4.12)	(0.66)	(5.34)	(4.43)	(3.78)	(2.27)	(2.64)	(2.29)	(0.38)
MTB	-0.07***	-0.08***	-0.01	-0.11***	-0.12***	-0.08***	-0.12***	-0.04***	-0.11***	-0.15***
	(7.50)	(9.68)	(0.85)	(12.09)	(15.09)	(9.42)	(13.09)	(8.45)	(13.00)	(17.19)
Log(MV)	8.69***	7.11***	3.71***	7.73***	6.70***	8.10***	7.99***	3.24***	7.56***	7.32***
	(55.89)	(51.09)	(32.32)	(50.65)	(50.22)	(48.25)	(46.88)	(32.36)	(46.02)	(44.05)
soc_ind	0.53***	0.69***	0.28***	0.49***	0.69***	0.72***	0.76***	0.13***	0.75***	0.82***
	(21.64)	(42.42)	(14.27)	(21.19)	(45.37)	(31.46)	(44.18)	(7.24)	(33.39)	(49.19)

soc_state	1.10***	0.93***	0.98***	1.07***	1.16***	0.78***	0.75***	1.08***	0.80***	0.99***
	(58.72)	(54.23)	(145.39)	(59.57)	(71.32)	(41.93)	(42.92)	(200.91)	(44.01)	(57.13)
soc_yr	1.39***	1.36***	1.04***	1.00***	1.12***	0.79***	0.70***	1.28***	0.73***	0.54***
	(19.94)	(24.76)	(14.94)	(15.09)	(21.42)	(12.37)	(12.92)	(23.46)	(11.50)	(10.33)
N	24873	24873	24873	24873	24873	24873	24873	24873	24873	24873
Psudo R-sq	0.19	0.16	0.46	0.24	0.20	0.19	0.21	0.35	0.22	0.24

This table presents the results of quantile regressions of ESG performance for the period 2002 to 2012 where the dependent variable is social (soc), environmental (env) and governance (gov) performance as assessed by ASSET4 and the test variables are strategic equity holdings, family equity holdings and governance (models 4, 5 8 and 9 only). Control variables are leverage, profitability, market-to-book and the log of capitalisation, industry, country and year averages of the dependent variables. T-statistics do not compensate for any clustering in the standard errors and significance tests should be used with caution.

+p<.10
*p<.05
**p<.01
***p<.001

TABLE 5

Propensity Score Matching Tests of the Impact of Family Equity Holdings on Social, Environmental and Governance Performance

Variable	Sample	Treated	Controls	Difference	S.E.	T-stat
Model 1: Family vs. All (Propensity score excludes governance)						
social	Unmatched	44.18	51.73	-7.56***	0.63	-12.01
	ATT	44.20	49.65	-5.45***	0.71	-7.70
environment	Unmatched	41.97	51.75	-9.78***	0.65	-15.04
	ATT	42.01	48.14	-6.13***	0.72	-8.56
governance	Unmatched	43.80	54.27	-10.47***	0.61	-17.13
	ATT	43.99	50.54	-6.55***	0.69	-9.55
Model 2: Family vs. Strategic (Propensity score excludes governance)						
social	Unmatched	43.40	49.98	-6.59***	0.89	-7.39
	ATT	43.36	47.97	-4.61***	1.00	-4.60
environment	Unmatched	41.49	48.73	-7.24***	0.91	-7.93
	ATT	41.39	46.40	-5.01***	1.00	-5.02
governance	Unmatched	45.77	54.21	-8.44***	0.84	-10.03
	ATT	45.94	49.97	-4.03***	0.98	-4.10
Model 3: Family vs. Other (Propensity score excludes governance)						
social	Unmatched	44.86	54.49	-9.64***	0.92	-10.43
	ATT	44.46	51.45	-6.98***	1.17	-5.98
environment	Unmatched	42.40	56.78	-14.38***	0.96	-15.02
	ATT	42.54	50.11	-7.57***	1.20	-6.31
governance	Unmatched	41.91	54.36	-12.45***	0.94	-13.28
	ATT	43.52	54.60	-11.07***	1.12	-9.91
Model 4: Family vs. All (Propensity score includes governance)						
social	Unmatched	44.18	51.73	-7.56***	0.63	-12.01
	ATT	44.27	46.86	-2.59**	0.72	-3.59
environment	Unmatched	41.97	51.75	-9.78***	0.65	-15.04
	ATT	42.09	45.52	-3.43***	0.73	-4.71

governance	Unmatched	43.80	54.27	-10.47***	0.61	-17.13
	ATT	44.04	44.64	-0.60	0.70	-0.87
Model 5: Family vs. Strategic (Propensity score includes governance)						
social	Unmatched	43.40	49.98	-6.59***	0.89	-7.39
	ATT	43.18	46.51	-3.33***	1.00	-3.34
environment	Unmatched	41.49	48.73	-7.24***	0.91	-7.93
	ATT	41.17	45.68	-4.51***	1.00	-4.53
governance	Unmatched	45.77	54.21	-8.44***	0.84	-10.03
	ATT	46.31	46.91	-0.61	0.97	-0.62
Model 6: Family vs. Other (Propensity score includes governance)						
social	Unmatched	44.86	54.49	-9.64***	0.92	-10.43
	ATT	45.27	46.43	-1.16	1.20	-0.97
environment	Unmatched	42.40	56.78	-14.38***	0.96	-15.02
	ATT	43.25	45.58	-2.34**	1.23	-1.90
governance	Unmatched	41.91	54.36	-12.45***	0.94	-13.28
	ATT	44.57	45.18	-0.61	1.14	-0.54

This table presents the results of propensity score matched analysis of the impact of family holdings of greater than 10 percent when matched with a) all firms in the sample, b) those firms in the sample who have strategic equity holdings of more than 10 percent excluding family holdings and c) those firms that have strategic equity holdings excluding family equity holdings of less than 10 percent. In the first three tests the propensity of the firms to have family holdings of more than 10 percent is estimated using percentiles of leverage, profitability, market-to-book and the log of market capitalisation plus industry, country and year dummies. In the final three tests the propensity score estimation is supplemented by the inclusion of the governance variable. Each treatment case (family equity > 10 percent) is matched with the five control cases with propensity scores falling within plus or minus 0.001 probability of treatment. The estimated average impact of treatment on the treated (ATT) is reported in the difference column and the estimated t-statistic is reported in the final column.

+p<.10
*p<.05
**p<.01
***p<.001

APPENDIX 1
Quantile Regressions Models of Strategic and Family Equity Holdings on Social, Environmental and Governance Performance (50^{th} Percentile)

DV =	Model 1 soc	Model 2 env	Model3 gov	Model 4 soc	Model 5 env
governance				0.31*** (46.30)	0.24*** (27.71)
strategic	-0.08*** (7.19)	-0.08*** (9.58)	-0.10*** (17.61)	0.00 (0.27)	-0.05*** (4.01)
family	-0.12*** (4.81)	-0.13*** (6.92)	-0.15*** (12.75)	-0.08*** (4.34)	-0.07*** (3.31)
leverage	0.05*** (5.77)	0.05*** (7.10)	0.03*** (6.35)	0.02** (2.68)	0.03*** (3.96)
profitability	0.04*** (3.77)	0.03*** (4.05)	0.01 (1.50)	0.05*** (5.38)	0.03** (3.00)
MTB	-0.08*** (8.00)	-0.12*** (15.35)	-0.02*** (4.42)	-0.11*** (13.68)	-0.15*** (13.95)
Log(MV)	8.78*** (44.30)	8.05*** (54.38)	3.45*** (35.33)	8.00*** (51.37)	7.55*** (37.16)
Industry	0.75*** (27.34)	0.97*** (63.88)	0.19*** (11.37)	0.64*** (30.08)	0.97*** (47.41)

Country	1.05***	1.00***	1.09***	1.01***	1.09***
	(46.85)	(62.47)	(187.43)	(57.55)	(53.24)
Year	1.17***	1.04***	1.04***	0.87***	0.94***
	(15.13)	(20.75)	(18.24)	(14.37)	(20.94)
N	24873	24873	24873	24873	24873
Psudo R-sq					

This table presents the results of quantile regressions of ESG performance for the period 2002 to 2012 where the dependent variable is social (soc), environmental (env) and governance (gov) performance as assessed by ASSET4 and the test variables are strategic equity holdings, family equity holdings and governance (models 4 and 5 only). Control variables are leverage, profitability, market-to-book and the log of capitalisation, industry, country and year averages of the dependent variables. T-statistics are do not compensate for any clustering in the standard errors and significance tests should be used with caution.

+p<.10
*p<.05
**p<.01
***p<.001

APPENDIX 2
Effectiveness of the Matching Process on Control Variables and Industry, Country and Year Averages
(Governance excluded from Propensity Score)

		Mean			%reduction	t-test	
Variable		Treated	Control	% bias	|bias|	T	p>|t|
leverage	Unmatched	49.43	52.47	-10.4		-5.21***	0.00
	Matched	49.50	48.98	1.8	82.8	0.65	0.51
profitability	Unmatched	53.81	50.56	11.3		5.6***	0.00
	Matched	53.69	53.70	0	99.6	-0.02	0.98
MTB	Unmatched	54.11	49.88	14.4		7.2***	0.00
	Matched	53.96	53.88	0.3	97.9	0.11	0.91
Log(MV)	Unmatched	15.05	15.42	-27.5		-13.52***	0.00
	Matched	15.05	15.04	0.7	97.3	0.27	0.78
env_ind	Unmatched	47.25	50.99	-29.7		-14.38***	0.00
	Matched	47.31	46.98	2.6	91.3	0.95	0.34
env_country	Unmatched	52.35	50.33	16.3		8.16***	0.00
	Matched	52.31	52.07	1.9	88.2	0.68	0.49
env_yr	Unmatched	50.42	50.53	-3.1		-1.49	0.13
	Matched	50.43	50.47	-1	68.2	-0.37	0.71
soc_ind	Unmatched	48.20	51.15	-31.2		-15.29***	0.00
	Matched	48.22	47.96	2.7	91.3	0.99	0.32

soc_state	Unmatched	53.47	50.45	25.2		13.02***	0.00
	Matched	53.41	53.30	0.9	96.6	0.29	0.76
soc_yr	Unmatched	50.71	50.81	-3		-1.42	0.15
	Matched	50.72	50.75	-0.9	68.7	-0.34	0.73
gov_ind	Unmatched	51.92	52.94	-13.4		-6.43***	0.00
	Matched	51.90	51.77	1.7	87.2	0.65	0.51
gov_state	Unmatched	50.78	53.27	-11.6		-5.39***	0.00
	Matched	50.91	51.48	-2.6	77.2	-1.05	0.29
gov_yr	Unmatched	52.79	52.83	-2		-0.98	0.32
	Matched	52.79	52.81	-1	48.4	-0.39	0.69

This table presents the differences between the control variables used in estimating the propensity scores (leverage, profitability, market-to-book and the log of market capitalisation) together with industry, country and year averages for each dependent variable. For each case we present the mean for the treatment and control group before and after matching, the bias before and after, the reduction in the absolute bias, the t-statistic for the difference in means and the p-value for the difference in means.

+p<.10
*p<.05
**p<.01
***p<.001

APPENDIX 3
Effectiveness of the Matching Process on Control Variables and Industry, Country and Year Averages
(Governance Included in Propensity Score)

Variable		Mean Treated	Mean Control	% bias	%reduct |bias|	t-test t	p>|t|
governance	Unmatched	43.80	54.27	-35.30		-17.13***	0.00
	Matched	44.04	44.64	-2.00	94.20	-0.76	0.45
leverage	Unmatched	49.43	52.48	-10.40		-5.21***	0.00
	Matched	49.46	50.07	-2.10	80.10	-0.75	0.45
profitability	Unmatched	53.81	50.56	11.30		5.60***	0.00
	Matched	53.76	53.67	0.30	97.30	0.11	0.91
MTB	Unmatched	54.12	49.88	14.40		7.20***	0.00
	Matched	54.06	53.64	1.40	90.20	0.51	0.61
Log(MV)	Unmatched	15.06	15.43	-27.50		-13.52***	0.00
	Matched	15.06	15.06	0.50	98.30	0.17	0.87
env_ind	Unmatched	47.25	50.99	-29.70		-14.38***	0.00
	Matched	47.30	46.87	3.50	88.40	1.28	0.20
env_state	Unmatched	52.36	50.34	16.30		8.16***	0.00
	Matched	52.34	52.20	1.20	92.90	0.41	0.68
env_yr	Unmatched	50.42	50.54	-3.10		-1.49	0.14
	Matched	50.42	50.38	1.30	59.50	0.48	0.63

soc_ind	Unmatched	48.21	51.15	-31.20		-15.29***	0.00
	Matched	48.22	47.87	3.70	88.00	1.36	0.17
soc_state	Unmatched	53.47	50.45	25.20		13.02***	0.00
	Matched	53.44	53.56	-1.00	96.20	-0.33	0.74
soc_yr	Unmatched	50.72	50.81	-3.00		-1.42	0.16
	Matched	50.72	50.67	1.40	51.90	0.54	0.59
gov_ind	Unmatched	51.93	52.94	-13.40		-6.43***	0.00
	Matched	51.92	51.78	1.80	86.50	0.69	0.49
gov_state	Unmatched	50.79	53.28	-11.60		-5.39***	0.00
	Matched	50.92	51.79	-4.00	65.10	-1.61	0.11
gov_yr	Unmatched	52.79	52.84	-2.00		-0.98	0.33
	Matched	52.79	52.77	1.10	44.40	0.43	0.67

This table presents the differences between the control variables used in estimating the propensity scores (governance, leverage, profitability, market-to-book and the log of market capitalisation) together with industry, country and year averages for each dependent variable. For each case we present the mean for the treatment and control group before and after matching, the bias before and after, the reduction in the absolute bias, the t-statistic for the difference in means and the p-value for the difference in means.

+p<.10
*p<.05
**p<.01
***p<.001

[i] We collect data on all firms which are potentially subject to ASSET4 ESG evaluation during the sample period 2002-2012. Of these we identify explanatory variables for 37,895 firm/years for which we use 24,873 cases with ASSET4 scores. This implies that we may have a systematic relationship between the inclusion in our models, the ESG dependent variables and the explanatory variables. The inclusion of the inverse Mills ratio controls for the probability of a case being included in the regression model.